DETAILED ACTION

Response to Amendment

This Office Action is in response to the amendment submitted on 07/17/2008. Claims 1-10 are pending in the applications, with claims 6-7 having being withdrawn. Accordingly, claims 1-5 and 8-10 are being examined on the merits herein.

Receipt of the aforementioned amended claims is acknowledged and has been entered.

Applicant's arguments against the 35 USC 102(b) rejection of claims 1-5 and 8-10 over Dupuis et al. has been fully considered and has been found persuasive. Because Dupuis is silent as to the form of the final co-polymer, one would not readily ascertain the exact form of the composition of Dupuis et al. even though Dupuis et al. do indeed state the polymer was obtained in an aqueous solution. As a result, Examiner withdraws the aforementioned 102 (b) rejection.

In view of applicant's amendment, the following modified 103 (a) Non-Final rejection is being made.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5 and 8-10 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Dupuis et al. (U.S. 6,120,780, previously submitted) in view of Sehm (U.S. 4,420,610).

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Dupuis et al. teach a process of making poly(2-acrylamido-2-methylpropanesulphonic acid) using at least 90% neutralized poly(2-acrylamido-2-methylpropanesulphonic acid) by free-radical polymerization (see col. 4, lines 5-23; Preparation Example A col. 6, lines 30-67; and Preparation Example B col. 7, lines 1-36). Dupuis et al. teach a process comprising the following steps:

(a) the 2-acrylamido-2methylpropanesulphonic acid monomer is dispersed or dissolved in free form in a tert-butanol or water and tert-butanol solution;

(b) the monomer solution or dispersion obtained in (a) is neutralized with one or more

inorganic or organic bases preferably aqueous ammonia NH3, in an amount which makes it possible to obtain a degree of neutralization of the sulphonic acid functions of the polymer ranging 90 to 100%; (c) the crosslinking monomer(s) is/(are) added to the solution or dispersion obtained in (b); (d) a standard radical polymerization is carried out in the presence of free-radical initiators at a temperature ranging from 10 to 150°C, the polymer precipitating in the tert-butanol based solution or dispersion (see col. 4, lines 5-23). More specifically, Preparation Example A (col. 6, lines 31-67) teaches dispersion of 2-acrylamido-2-methylpropanesulphonic acid in a tert-butanol solvent with vigorous stirring (col. 6, lines 35-37). The reaction medium is maintained at room temperature, when ammonia is added, to neutralize the reactive sulphonic acid groups (thus producing ammonium 2- acrylamido-2-methylpropanesulphonate), and until a pH of about 6-6.5 is obtained after about 30 minutes. A solution of trimethyloylpropane triacrylate in tert-butanol (a monomer having three olefinic double bonds (only two is required) and the reaction media is heated to 60°C, the reaction is simultaneously made inert by the addition of nitrogen into the flask. Once the reaction temperature is reached, the dilauroyl peroxide is added to initiate the free radical polymerization reaction, which starts immediately and after 15 min from the addition of the initiator, a stream of nitrogen is introduced and the reaction medium temperature increases to a maximum of 65-70°C. After 30 min at this maximal temperature, the medium is heated to reflux and maintained for 2 hr. A thick paste forms. The mixture is cooled to room temperature and the product is filtered off. In Preparation Example B, an additional step is found to recover the paste which adds the step of drying the paste at 60-70°C under vacuum for

24 hours (see col. 7, lines 25- 28). This step is equivalent to raising the temperature to remove the tert-butanol or tert-butanol and water solvent and the use of vacuum also is equivalent to removing the polymerization medium at lower than atmospheric pressure. The additional step adding water to the mixture of the polymer and polymerization medium is addressed by Dupuis et al. in that the polymerization medium may be a solution of tert-butanol and water.

Furthermore, Dupuis et al. also teaches the instantly claimed limitations. The counterion X in the formula (I) is a proton, a cation of an alkali metal, a cation equivalent to that of an alkaline earth metal or the ammonium ion (see col. 2, lines 28-31). Additionally, the crosslinking monomers are taught to have at least two olefinic double bonds and may be chosen from dipropylene glycol diallyl ether, polyglycol diallyl ethers, triethylene glycol divinyl ether, hydroquinone diallyl ether, tetrallyloxethanoyl or other polyfunctional allyl or vinyl ether alcohols, tetraethylne glycol diacrylate, triallylamine, trimethyloylpropane diallyl ether, methylene bisacrylamide and divinylbenzene (see col. 2, lines 34-41). Dupuis et al. further teach polymerization mediums of tert-butanol or water and tert-butanol (see col. 4, lines 10-11 and 22-23).

Dupuis et al. does not specifically teach adding a high boiling solvent to the mixture of polymer and polymerization medium during the process of making the polymer and then removing the polymerization medium subsequently.

Sehm teaches slurries of polymers in petroleum liquid bases such as mineral spirits that are obtained by solvent exchange process wherein the polymer slurry is first added to an organic solvent with a boiling point below that of the mineral spirits, that is subsequently heated to a temperature to distill off the polymerization medium while replacing that organic solvent (i.e. polymerization medium) which may be done simultaneously (see abstract and col. 1, Summary of the Invention, lines 40-52). Sehm particularly teaches that often times during the course of polymerization, the polymer can begin to precipitate from solution as it forms, then forms a slurry in the solvent (i.e. polymerization medium) which may caused processing problems at high solid contents (see col. 1, lines 22-24). On the other hand, conducting polymerization in certain solvents such as mineral spirits can cause processing problems as well and induce changes in some physical properties of the polymer which may subsequently require modification of normal polymerization processes (see col. 1, lines 31-34). As a result, other techniques for obtaining slurries containing particular solvents are desired.

As for the polymerization process, Sehm teaches that the polymerization is conducted in inert liquid media having some solubilizing effect on the monomeric ingredients wherein the medium used for the polymerization is one in which the monomers are preferably soluble and the resulting polymer is substantially insoluble (see col. 5 lines 53-59 and col. 10, claims 1, 4,7, 8, 10 and 14-15). Typical solvents include alcohols including butanol and the like possessing bowling points below that of mineral spirits that are below about 125 °C (see col. 5, lines 66 and col. 6, lines 6-10). The exchange solvent liquids are preferably inert, water-clear, liquid petroleum fractions

such as mineral spirits, mineral oil (which necessarily includes paraffin oils), and the like containing a major portion of aliphatic hydrocarbons, and having a boiling range from about 90 °C to about 350 °C (see col. 7, lines 1-16). Particularly, Sehm teaches that the solvent exchange is accomplished by adding mineral spirits, for example, to the polymer slurry, a slurry in the polymerization media that has a boiling point below that of the mineral spirits, and distilling off the lower boiling polymerization media (i.e. organic liquid in this case), and thus leaving the polymer slurried in the more desirable mineral spirits (see col. 7, lines 17-23). Importantly, Sehm teaches that the mineral spirits (i.e. higher boiling solvent or solvent mixtures) to be used may be added at the beginning of the distillation (i.e. before removing the polymerization media) or simultaneously (i.e. during the polymerization process) or after polymerization has occurred (see col. 7, lines 27-36 and lines 46-53).

Thus, to one of ordinary skill in the art at the time of the invention would have found it obvious to utilize the method of Dupuis et al. and add additional solvent or solvent mixtures to the process as taught by Sehm if the desire is to obtain polymers with no polymerization processing problems and if no changes in the physical properties of the polymers are desired. Given the teachings of Dupuis in view of Sehm, one of ordinary skill would have been motivated to add a solvent or solvent mixtures to the process of Dupuis as taught by Sehm with the reasonable expectation of providing a method that generates polymers with no change in physical properties and polymers in the desired solvents.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samira Jean-Louis whose telephone number is 571-270-3503. The examiner can normally be reached on 7:30-6 PM EST M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan can be reached on 571-272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. J. L. /

Examiner, Art Unit 1617

10/22/2008

/SREENI PADMANABHAN/

Supervisory Patent Examiner, Art Unit 1617